

REMARKS

The Applicants respectfully request reconsideration and allowance.

CLAIM STATUS

The pending claims 1-33 include examined claims 1-21 and 28-33 and withdrawn claims 22-27. The independent claims under examination are claims 1 and 28.

Applicants have amended claim 1, 3-5, and 28 to correct inadvertent typographical errors and/or to make the claims clearer. Support for amended claim 1 and 28 can be found in the specification, paragraphs 66-68, page 13 and supporting figures. No new matter is believed to have been added, and a telephone interview with the undersigned is respectfully requested if the Examiner believes otherwise.

The Applicants thank the Examiner for indicating possible allowability of claims 5, 6, 16, 32, and 33. The Applicants agree that these and other claims are not anticipated by or rendered obvious by the cited art. In particular, the willingness to allow claim 33 bears on the present issues. Claim 33 specifies, in essence, that the second electrode is drawn toward the first electrode.

CLAIM OBJECTIONS

The PTO objected to claims 3-5. The Applicants believe that the revised claims obviate the objection.

REJECTIONS UNDER 35 U.S.C. § 112 ¶ 2

Claims 1-21 stand rejected as indefinite. The Applicants believe that the present amendment of claim 1 obviates the rejection.

PRIOR ART REJECTIONS

The PTO rejected pending claims relying on Takeuchi et. al. (US 6,682,318), solely, or in combination O'Connor (US 4,581,624). Applicants note that the claimed invention solves a problem of making an electrostatic fluid regulating device which does not

substantially expose fluid to the electric field. Neither of the cited references addresses this problem as Takeuchi's device employs not electrostatic, but piezoelectric/electrostrictive or anti-ferroelectric actuation while O'Connor's electrostatically actuated device exposes the fluid to the electric field. Combining teachings of Takeuchi and O'Connor will destroy their respective devices.

In the below sections, Applicants address the prior art rejections in the order presented in the Office Action.

REJECTIONS UNDER 35 U.S.C. § 102(e)

Claims 1-3, 7-9, 17-21 and 28-31 stand rejected as anticipated by Takeuchi et. al. (US 6,682,318). The Applicants respectfully traverse.

Many differences exist between Takeuchi and the present claims. For example, the Applicants stress that the amended claims 1 and 28 recite that the first and second electrodes provide electrode movement to vary the height of the fluid channel when a potential difference arises between them. In contrast, in Takeuchi, electrodes 62a and 62b are separated by a shape retaining layer 60 such as a piezoelectric/electrostrictive layer or an anti-ferroelectric layer (see, for example, Takeuchi, column 5, lines 40-53). A voltage applied between electrodes 62a and 62b causes them not to move towards each other but to bend together with the shape retaining layer (see Takeuchi, column 6, lines 17-27, and column 7, lines 24-37, and Figures 11, 17, and 25). The Applicants further note that the above aspect reflects the electrostatic nature of the actuation in the instant invention, which is quite different from piezoelectric, electrostrictive or anti-ferroelectric actuation of Takeuchi. The difference is a structural difference with patentable weight. In conclusion, since Takeuchi does not disclose all the aspects of the claimed invention, Applicants respectfully request withdrawal of the rejection.

REJECTIONS UNDER 35 U.S.C. § 103

Claim 4 stands rejected as obvious over Takeuchi in view of O'Connor (US 4,581,624). Claims 10-15 stand rejected as obvious over Takeuchi.

Applicants stress that, in supporting the rejection of claim 4, the PTO quoted only Takeuchi without O'Connor, while, in supporting of the rejection of claims 10-15, the PTO quoted both O'Connor and Takeuchi. Applicants believe that the PTO's intention was to reject claim 4 as obvious over Takeuchi and to reject claims 10-15 as obvious over Takeuchi in view of O'Connor. In this response, Applicants address both of the obviousness rejections as based on Takeuchi and O'Connor and, therefore, present a single remark traversing both of the obviousness rejections.

As discussed above, Takeuchi does not teach that the first and second electrodes provide electrode movement to vary the height of the flow channel when a potential difference arises between them as recited in the rejected claims. This aspect reflects the electrostatic nature of actuation in the claimed device which is quite different from piezoelectric/ electrostrictive or anti-ferroelectric actuation of Takeuchi. Although O'Connor teaches an electrostatically actuated device with one electrode moving towards the other, O'Connor can not remedy the deficiency of Takeuchi as ordinary artisan would not have required motivation to combine teachings of the '318 and '624 patents as combining disclosures of Takeuchi and O'Connor will destroy their respective devices. Electrostatic actuation as presently claimed and taught by O'Connor cannot be used in Takeuchi. If the Examiner believes otherwise, the Examiner should explain his position in the record. Accordingly, Applicants respectfully request withdrawal of the obviousness rejections.

CONCLUSION

The Applicants believe that the present application is in condition for allowance. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Applicants petition for a three month extension of time. The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. § 1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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By 

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Amendments to the Drawings:

The Applicants have replaced original sheets 3, 5, and 6 with replacement sheets (see attached). In addition, the Applicants have amended Figure 6 to include reference signs 605, 607, 609, and 612 mentioned in the description of figure 6, see specification page, paragraphs 0046-0047. No new matter has been added. If an annotated sheet showing changes is believed needed, the Examiner should contact the undersigned.